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(56) Documents Cited
EP 0982795 A1
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US 5644207 A
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US 6339311 B1
US 5579388 A

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(54) Abstract Title
Mobile telephone with solar panel

(57) A mobile telephone having a rechargeable battery is provided additionally with a solar panel comprising at least one solar cell 30 mounted on the telephone and connected to charge the battery. The solar panel of the invention is mounted on the same side of the telephone as the earpiece 14.

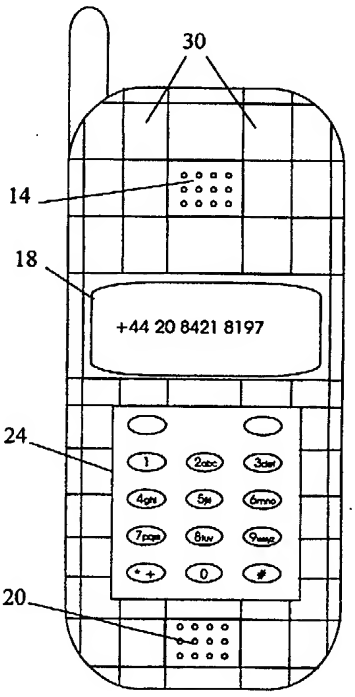

Figure 2

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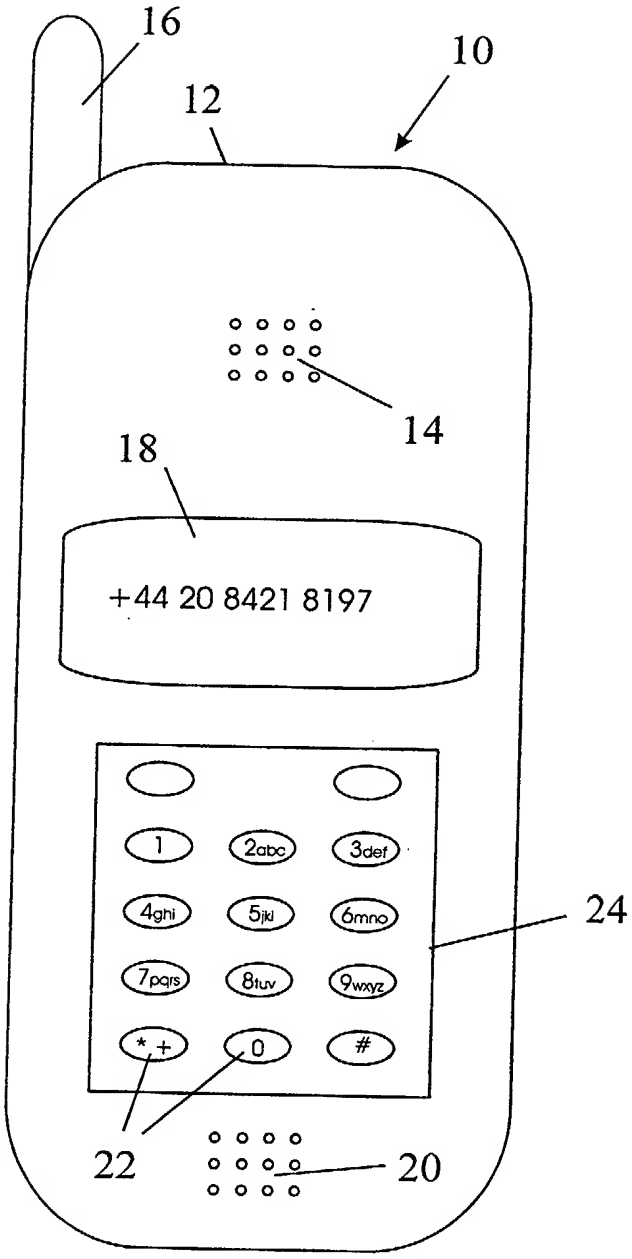

Figure 1

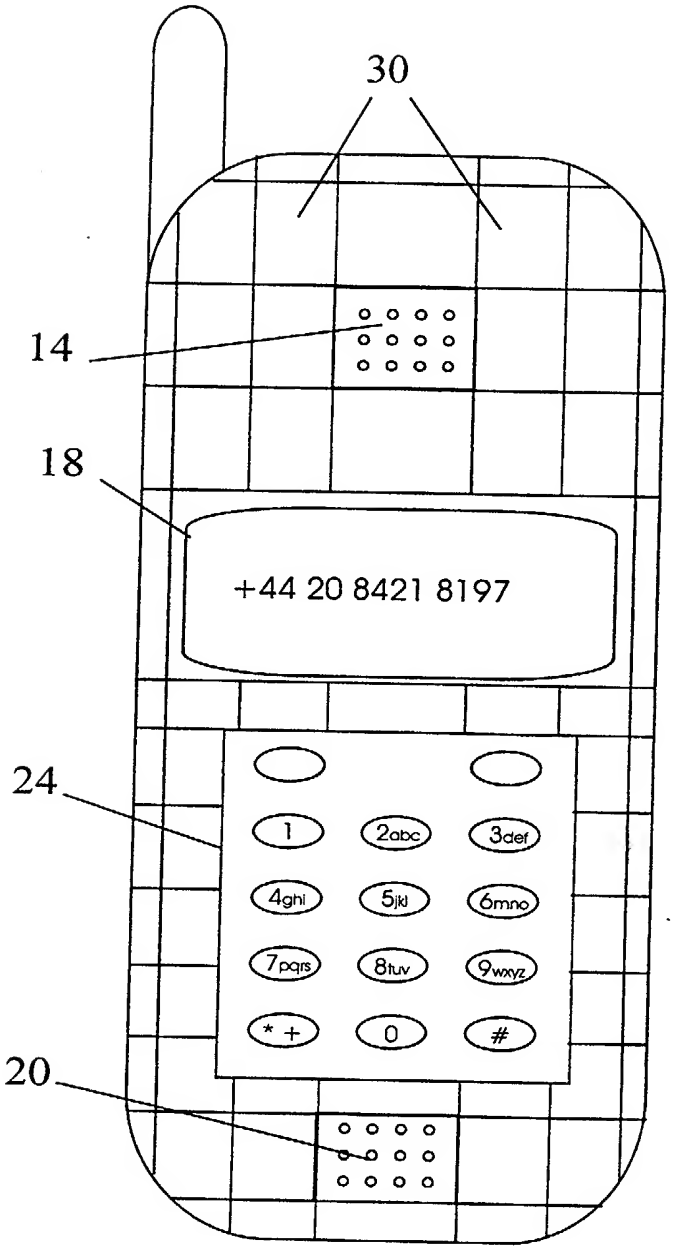

Figure 2

MOBILE TELEPHONE

The present invention relates to a mobile telephone handset, this term being used to include cellular telephones and cordless telephones.

Mobile telephones require their own power supply and for this purpose include a battery, which is normally rechargeable at a bas station. However, when the mobile telephone is away from its base station or when there is no ready supply for electricity for the base station, then the telephone will cease to function once the power in the battery has run down.

Mobile telephones have a front side, on which are mounted the operating keys, the mouthpiece, the earpiece and a display screen. The rechargeable battery is normally mounted in the back of the telephone and the rear side is often formed by the removable cover of the battery compartment. In order to prolong the battery power between recharging, it has been proposed in US 5,898,932 to incorporate a solar panel on the rear side of the telephone and to use its output to charge the battery.

The present inventors have recognised a serious disadvantage in this proposal in that users intuitively rest a mobile telephone, when it is not in use, on a horizontal surface with its front side facing upwards. The reasons for this are that placing the telephone face down muffles the sound and makes it more difficult to hear the telephone when it rings. Furthermore, the user would not be able to see the screen and would not be able to identity a caller or see if any calls have been missed. When resting in this attitude, the solar panel of the latter US patent does not receive any light and is all but ineffective.

According to the present invention, there is provided a mobile telephone having a rechargeable battery and a solar panel comprising at least one solar cell mounted on the telephone and connected to charge the battery, characterised in that the solar panel is mounted on the same side of the telephone as the earpiece of the telephone. In normal telephones, this will also result in the solar panel being mounted on the same side as the mouthpiece, the operating keys and a display screen.

It is known the form telephones of a frame carrying all the components of the telephone, surrounded by a casing that comprises a front and back cover that simply clip on to the frame. The front and back covers are readily replaceable and can be purchased separately either to repair a casing that has been inadvertently damaged or simply for aesthetic reasons, to personalise the telephone.

The present invention may be implemented by means of a front cover that incorporates a solar panel. The contacts to connect the solar panel to the rechargeable battery may be formed on the cover and the frame. Alternatively, the cover may have a lead that plugs into a recharging socket on the frame.

As it is desirable for the solar panel to have as large an area as possible, it may extend around the sides of the telephone as they too will receive light when the telephone is resting on its back on a horizontal surface.

The invention will now be described further, by way of example, with reference to the accompanying drawings, in which :

Figure 1 is a front view of a conventional mobile telephone, and

Figure 2 is a similar front view of a telephone of the invention.

Figure 1 shows a conventional mobile telephone 10 having an outer casing 12 with a projecting antenna 16. On the front face of the telephone there are mounted an earpiece or speaker 14, a screen 18, a keypad 24 with various number and function keys 22 and a mouthpiece or microphone 20.

The telephone has an internally mounted rechargeable battery that is accessed by removing the back cover of the telephone, not shown in the drawing. The lower edge of the telephone normally carries contacts and a socket to allow the internal battery to be recharged by resting the telephone in a base station or by plugging in a mains powered charger.

The front and rear covers that together form the casing 12 of the telephone are often removable and simply clip into place so that they may readily be replaced if accidentally damaged.

In the present invention, a solar (i.e. photovoltaic) panel comprising cells 30 is mounted on the front cover of the casing and is connected to supply power to the internal rechargeable battery. The cells of the solar panel surround the keypad 24, the screen 18, the mouthpiece 20 and the earpiece 14. As the telephone is normally placed faced up on a horizontal surface when it is not in use, the solar panel is always well positioned to receive ambient light and convert this light into electrical power to recharge the internal battery of the telephone.

The connection between the solar panel and the internal battery can be effected by means of contacts formed on the inner surface of the front cover that mate with contacts on the inner frame of the telephone.

As the cover is formed separately from the frame of the telephone that supports its various working components, it is possible for the invention to be implemented with telephones of current design by supplying replacement front that incorporates a solar panel. In this case, it is possible to form the front cover with a lead to plug into the existing socket provided for connection of an external charger.

As the solar panel will function for most of the time that the telephone is not in use, its output will trickle charge the internal battery and supplement its own storage capacity significantly. If the telephone is not subjected to heavy usage, the solar cells could provide sufficient power to maintain the battery on full charge almost indefinitely.

CLAIMS

1. A mobile telephone having a rechargeable battery and a solar panel comprising at least one solar cell mounted on the telephone and connected to charge the battery, characterised in that the solar panel is mounted on the same side of the telephone as the earpiece of the telephone.

2. A mobile telephone as claimed in claim 1, wherein the solar panel is mounted on the same side as the mouthpiece, the operating keys and a display screen.

3. A mobile telephone as claimed in claim 1, wherein the solar panel is incorporated into a detachable front cover.

4. A mobile telephone as claimed in claim 3, wherein contacts are provided on the inner side of the front cover to establish an electrical connection with the battery.

5. A mobile telephone as claimed in any preceding claim, wherein the solar panel extends around the sides of the telephone.

6. A mobile telephone constructed substantially as hereinbefore described with reference to and as illustrated in Figure 2 of the accompanying drawings.

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Examiner: Peter Easterfield
Date of search: 4 October 2002

Patents Act 1977
Amended Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.T): H4J (JK)

Int Cl (Ed.7): H04M 1/02

Other: Online: WPI, EPODOC, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	DE 29905047 U1	(MORITZ) see the fig	1,2,5
X	EP 0982795 A1	(ICO) see figs 4a, 5a	1,2
X	US 6339311 B1	(CALDWELL) see fig 3b	1,2
X	US 5579388 A	(ENDROES et al) see column 5 lines 51-64	1,2,5
X	US 5644207 A	(LEW et al) see column 4 lines 55-65	1,2,5
X	WO 01/65711 A1	(LEEM) see fig 1	1,2

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.